CLAIMS

1. A method for producing a single crystal by pulling a single crystal from a raw material melt in a chamber in accordance with Czochralski method, comprising pulling a single crystal having a defect-free region which is outside an OSF region to occur in a ring shape in the radial direction and which interstitial-type and vacancy-type defects do not exist in, wherein the pulling of the single crystal is performed with being controlled so that an average of cooling rate in passing through a temperature region of the melt point of the single crystal to 950 °C is in the range of 0.96 °C/min or more and so that an average of cooling rate in passing through a temperature region of 1150 °C to 1080 °C is in the range of 0.88 °C/min or more and so that an average of cooling rate in passing through a temperature region of 1050 °C to 950 °C is in the range of 0.71 °C/min or more.

2. The method for producing a single crystal according to Claim 1, wherein a growth rate margin for pulling the single crystal having a defect-free region (an upper limit of the growth rate - a lower limit of the growth rate) is in the range of

7% or more of a growth rate average of the single crystal ((the upper limit of the growth rate + the lower limit of the growth rate) ÷ 2).

3. The method for producing a single crystal according to Claim 1 or 2, wherein the controlling of the temperature region for pulling the single crystal is performed by arranging at least a cooling cylinder to be forced cooled with a cooling medium and an auxiliary member for cooling in the chamber.

4. The method for producing a single crystal according to any one of Claims 1 to 3, wherein the single crystal to be produced is a silicon single crystal.

5. The method for producing a single crystal according to any one of Claims 1 to 4, wherein a diameter of the straight body of the single crystal is 150 mm or more.

6. The method for producing a single crystal according to any one of Claims 1 to 5, wherein the pulling of the single crystal is performed with applying a magnetic field of a central magnetic field strength in the range of 300 gauss to 6000

gauss.

7. A single crystal produced by the method according to any one of Claims 1 to 6.